Notice of Allowability    10/812,538   Examinor   Art Unit		· · · · · · · · · · · · · · · · · · ·		
Notice of Allowability    Examiner   Chester T. Barry   Chester T. Barry   1724		Application No.	Applicant(s)	
Chester T. Barry   1724	Notice of Allowahility			
The MAILING DATE of this communication appears on the cover sheet with the correspondence addressed herewith (or previously maled). a Notice of Allowance (PTOL-56) or other appropriate communication will be main due course. TH NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the into fit the Office or top neptition by the applicant. See 37 CFR 1.313 and MPEP 1308.  1. ② This communication is responsive to 5/13/04.  2. ② The allowed claim(s) is/are 1-9.  3. ③ The drawings filed on 16 January 2004 are accepted by the Examiner.  4. ○ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  a) ○ All b) ○ Some c) ○ None of the:  1. ○ Certified copies of the priority documents have been received.  2. ○ Certified copies of the priority documents have been received in Application No.  3. ○ Copies of the certified copies of the priority documents have been received in International Bureau (PCT Rule 17.2(a)).  * Certified copies not received:  Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONIMENT of this application.  THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.  5. ○ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PCT-152) which gives reason(s) why the oath or declaration is deficient.  (a) ○ Including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  1) ○ hereto or 2) ○ to Paper No./Mail Date = 1/2004, 82004. (E.J. L.)  **Chester T. Barry Depart No./Mail Date = 1/2004, 82004. (E.J. L.)  **Chester T. Barry Depart No./Mail Date = 1/2004, 82004. (E.J. L.)  **Chester T. Barry Depart No./Mail Date = 1/2004, 82004. (E.J. L.)  **Chester T. Barry Depart No./Mail Date = 1/2004, 82004. (E.J. L.)  **Chester T. Barry Depart No./Mail Date = 1/2004, 82004. (E.J. L.)  **Chester T.	Notice of Allowability	Examiner	Art Unit	
All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a holice of Allowance (PTOL-56) or other appropriate communication will be mailed in due ourse. TH NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the init of the Office or top netition by the applicant. See 37 CFR 1.313 and MPEP 1308.  1. ☑ This communication is responsive to 5/13/04.  2. ☑ The allowed claim(s) is/are 1-9.  3. ☑ The drawings filed on 16 January 2004 are accepted by the Examiner.  4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  a) ☐ All b) ☐ Some* c) ☐ None of the:  1. ☐ Certified copies of the priority documents have been received.  2. ☐ Certified copies of the priority documents have been received in Application No. ☐ International Bureau (PCT Rule 17.2(a)).  * Certified copies not received: ☐ International Bureau (PCT Rule 17.2(a)).  * Certified copies not received: ☐ Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.  5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.  (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  1) ☐ hereto or 2) ☐ to Paper No./Mail Date ☐ (PTO-152) which gives reason(s) why the oath or declaration is deficient.  (b) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached Examiner's Comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL  Attachment(s)  1. ☑ Notice of References Cited (PTO-892)  2. ☐ Notice of References Cited (PTO-892)  3. ☐ In	•	Chester T. Barry	1724	
2. ☑ The allowed claim(s) is/are 1-9.  3. ☑ The drawings filed on 16 January 2004 are accepted by the Examiner.  4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  a) ☐ All b) ☐ Some* c) ☐ None of the:  1. ☐ certified copies of the priority documents have been received.  2. ☐ Certified copies of the priority documents have been received in Application No  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).  * Certified copies not received:  Applicant has THREE MONTHS FROM THE "MALING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDON/MENT of this application.  THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.  5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.  (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  1) ☐ hereto or 2) ☐ to Paper No./Mail Date  (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (c) ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s)  1. ☑ Notice of Praftperson's Patent Drawing Review (PTO-948)  2. ☐ Notice of Praftperson's Patent Drawing Review (PTO-948)  3. ☑ Information Disclosure Statements (PTO-1449 or PTO/SE/08), Paper No./Mail Date  Paper No./Mail Date  2. ☐ Chester T. Barry  571-272.1152 direct	All claims being allowable, PROSECUTION ON THE MERITS IS ( herewith (or previously mailed), a Notice of Allowance (PTOL-85) o NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIC	OR REMAINS) CLOSED or other appropriate comr GHTS. This application is	in this application. If not included nunication will be mailed in due course. TH	IIS tiative
3. ☑ The drawings filed on 16 January 2004 are accepted by the Examiner. 4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) ☐ All b) ☐ Some* c) ☐ None of the: 1. ☐ Certified copies of the priority documents have been received. 2. ☐ Certified copies of the priority documents have been received in Application No 3. ☐ Copies of the certified copies of the priority documents have been received in Application No 4. ☐ Certified copies not received:  Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to limely comply will result in ABANDONNENT of this application.  THIS THREE-MONTH PERIOD IS NOT EXTENDABLE. 5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  1) ☐ herefor or 2) ☐ to Paper No./Mail Date  (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (b) ☐ Identifying indicas under site happlication number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(e) should be labeled as such in the header according to 37 CFR 1.121(d).  7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s)  1. ☐ Notice of Praftperson's Patent Drawing Review (PTO-948)  3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date  Paper No./Mail Date  2. ☐ Chester T. Barry  571-272-1152 direct	<ol> <li>This communication is responsive to <u>5/13/04</u>.</li> </ol>			
4.	2. 🔀 The allowed claim(s) is/are <u>1-9</u> .			
a)  All  b)  Some* c)  None of the:  1.	3. $igotimes$ The drawings filed on <u>16 January 2004</u> are accepted by the	Examiner.		
2. Certified copies of the priority documents have been received in Application No	a) All b) Some* c) None of the:		) or (f).	•
3.			ion No	
International Bureau (PCT Rule 17.2(a)).  * Certified copies not received:	•			ne
* Certified copies not received:  Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. THIS THREE MONTH PERIOD IS NOT EXTENDABLE.  5.	•		- a was transfer and appropriate the control of	
noted below. Failure to timely comply will result in ABANDONMENT of this application.  THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.  5. A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.  6. CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  (a) including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  1) hereto or 2) to Paper No./Mail Date  (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date Paper No./Mail Date Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date Paper	* Certified copies not received:			
INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.  6.	noted below. Failure to timely comply will result in ABANDONME	f this communication to fi ENT of this application.	le a reply complying with the requirements	
(a)	5. A SUBSTITUTE OATH OR DECLARATION must be submit INFORMAL PATENT APPLICATION (PTO-152) which gives	ted. Note the attached Ex	KAMINER'S AMENDMENT or NOTICE OF or declaration is deficient.	
1)  hereto or 2) to Paper No./Mail Date  (b) including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).  7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s)  1. Notice of References Cited (PTO-892)  2. Notice of Draftperson's Patent Drawing Review (PTO-948)  3. Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04, 12/16/15 12/16/16/16/16/16/16/16/16/16/16/16/16/16/	6. $\square$ CORRECTED DRAWINGS ( as "replacement sheets") must	be submitted.		
(b)   including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date  Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).  7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s)  1. Notice of References Cited (PTO-892)  2. Notice of Draftperson's Patent Drawing Review (PTO-948)  3. Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04, 2/104 5/125/04  4. Examiner's Comment Regarding Requirement for Deposit of Biological Material  5. Notice of Informal Patent Application (PTO-152)  6. Interview Summary (PTO-413), Paper No./Mail Date 7. Examiner's Amendment/Comment  8. Examiner's Statement of Reasons for Allowance of Biological Material  Chester T. Barry 571-272-1152 direct	(a) ☐ including changes required by the Notice of Draftsperso	n's Patent Drawing Revie	ew ( PTO-948) attached	
Paper No./Mail Date  Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).  7. □ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s)  1. ☑ Notice of References Cited (PTO-892)  2. □ Notice of Draftperson's Patent Drawing Review (PTO-948)  3. ☑ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04. (2) 01 5/15/04  4. □ Examiner's Comment Regarding Requirement for Deposit of Biological Material  Chester T. Barry 571-272-1152 direct				
each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).  7. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s)  1. Notice of References Cited (PTO-892)  2. Notice of Draftperson's Patent Drawing Review (PTO-948)  3. Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04, 1/25/04  4. Examiner's Comment Regarding Requirement for Deposit of Biological Material  Chester T. Barry 571-272-1152 direct		Amendment / Comment	or in the Office action of	
7. □ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.  Attachment(s) 1. ☑ Notice of References Cited (PTO-892) 2. □ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☑ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04. (al. out 5/25/out 6. □ Interview Summary (PTO-413), Paper No./Mail Date 7. ☑ Examiner's Amendment/Comment 7. ☑ Examiner's Amendment/Comment 8. ☑ Examiner's Statement of Reasons for Allowance of Biological Material Chester T. Barry 571-272-1152 direct	Identifying indicia such as the application number (see 37 CFR 1.8 each sheet. Replacement sheet(s) should be labeled as such in the	4(c)) should be written on e header according to 37 C	the drawings in the front (not the back) of FR 1.121(d).	
<ol> <li>Notice of References Cited (PTO-892)</li> <li>Notice of Draftperson's Patent Drawing Review (PTO-948)</li> <li>Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04. Place of Biological Material</li> <li>Interview Summary (PTO-413), Paper No./Mail Date</li></ol>	<ol> <li>DEPOSIT OF and/or INFORMATION about the deposit attached Examiner's comment regarding REQUIREMENT F</li> </ol>	it of BIOLOGICAL MAT OR THE DEPOSIT OF B	FERIAL must be submitted. Note the IOLOGICAL MATERIAL.	
<ol> <li>Notice of References Cited (PTO-892)</li> <li>Notice of Draftperson's Patent Drawing Review (PTO-948)</li> <li>Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04. Place of Biological Material</li> <li>Interview Summary (PTO-413), Paper No./Mail Date</li></ol>				
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 9/13/04, 8/20/04. ② 125/04 4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material  6. ☐ Interview Summary (PTO-413), Paper No./Mail Date  7. ☐ Examiner's Amendment/Comment 8. ☐ Examiner's Statement of Reasons for Allowance 9. ☐ Other  Chester T. Barry 571-272-1152 direct		_		
Paper No./Mail Date  Paper No./Mail Date 9/13/04, 8/20/04.	,			
<ul> <li>Information Disclosure Statements (PTO-1449 or PTO/SB/08),         Paper No./Mail Date 9/13/04, 8/20/04.</li></ul>		Paper No	./Mail Date	
of Biological Material  9.   Other  Chester T. Barry 571-272-1152 direct	3. M Information Disclosure Statements (PTO-1449 or PTO/SB/08  Paper No./Mail Date 9/13/04, 8/20/04, 6/04 5/25/04	3), 7. ⊠ Examiner'	s Amendment/Comment	
Chester T. Barry 571-272-1152 direct		•		
571-272-1152 direct	o biologica Material	9.	<del></del> -	
	•		571-272-1152 direct	

U.S. Patent and Trademark Office PTOL-37 (Rev. 1-04) An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

## IN THE TITLE

The title was changed from:

"AIRLIFT MEMBRANE DEVICE AND MEMBRANE BIOREACTOR AND BIOREACTOR PROCESS CONTAINING SAME "

to

-- BIOREACTOR PROCESS USING AN AIRLIFT MEMBRANE DEVICE AND MEMBRANE BIOREACTOR --.

The following is an examiner's statement of reasons for allowance:

The prior art of record fails to describe or render obvious, within the meaning of 35 USC Sec. 103, a membrane bioreactor process comprising: performing a biological reaction within a bioreactor feed tank containing a liquid biomass feedstock; providing at least one airlift membrane device separating the feedstock into a retentate and a substantially biomass-free filtrate; the device having a bottom end face and a top end face and comprising a structure of at least one monolith of porous material, the monolith having a plurality of passageways extending longitudinally from the bottom end face to the top

Art Unit: 1724

end face, the surface area of the passageway wall surfaces being at least 150 square meters per cubic meter of monolith volume, and the membrane device further containing at least one filtrate conduit for carrying filtrate from within the device toward a filtrate collection zone; the porous material having a porosity of at least 30% and a mean pore size of at least 3 microns, and a porous membrane having a mean pore size below about 1 micron applied to the passageway wall surfaces to provide a biomass separating membrane barrier; introducing the liquid feedstock into said airlift membrane device at the bottom end face and sparging gas below the bottom end face to provide airlift circulation of the feedstock through the membrane device; and separating the feedstock under an applied transmembrane pressure into filtrate removed to the filtrate collection zone and gas-containing retentate that passes through the top end face of the membrane device.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CHESTER T. BARRY PRIMARY EXAMINER

571-272-1152